

## TRANSVERSE MODE CONTROL IN A TRANSMISSION LINE

### ABSTRACT

A waveguide apparatus (100) and method (300) of mode control can include a waveguide structure (102) defining at least one cavity (116) disposed within the 5 waveguide apparatus. The waveguide apparatus has at least a first operational state in which at least one cavity is filled with a conductive fluid (126) and at least a second operational state in which at least one cavity is purged of the conductive fluid. The waveguide apparatus can further include at least one composition processor (150) adapted for changing at least one among an electrical 10 characteristic and a physical characteristic of the waveguide apparatus by manipulating a volume of the conductive fluid and a controller (172) for controlling the composition processor in response to a transmission line mode control signal (174).